THE HYDROLOGICAL CYCLE OF BURABAY NATIONAL PARK LAKES

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Introduction. The main objective of the given project is to study the water balance of surface and ground water resources of Burabay National Park. The overall strategy consists of the following tasks: establishment of hydrometeorological monitoring system; creation of regional climate model; creation of integrated hydrological model; estimation of land use impact on water resources.

Materials and methods. Projections of temperature and rainfall in Kazakhstan were predicted for a period from 2020 to 2049 comparing to 1961-1990 with the use of Bayesian statistics [1]. Two scenarios of CO2 emissions (RCP85 and RCP45) were analyzed. The following equipment was used during field investigations: meteorological station Vantage Pro2 Plus (Fig.2); portable ion meter Orion Star F 329; portable GPS navigator Garmin Oregon 650. The Spatial Analyst, Raster Calculator and Algebra map tools of ArcGIS 10.2.1 software as well as LandSat images were used to estimate the snow cover area of the park territory [2].

Results and discussion. According to field investigations the concentration of fluorine ions in lakes is much higher than allowable limits. Climate analysis shows that in the period from 2020 to 2049 comparing to 1961-1990 a significant warming will be expected in Northern Kazakhstan. The data obtained from meteorological stations installed on the territory of Burabay National Park will serve as input variables for modeling snowmelt runoff.

Conclusions. According to obtained results, the shortage of water resources in BNP occurs due to the impact of anthropogenic factors related to tourism and recreational activities, as well as due to the impact of global climate change and land use. Thus, the knowledge of water balance and regime, as well as influence of climate and land use changes in Burabay National Park is compulsory for water resources study.

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References.

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